



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/923,223	08/06/2001	Kevin J. Dowling	C1104.70076US00	8966

23628 7590 08/02/2006

WOLF GREENFIELD & SACKS, PC
FEDERAL RESERVE PLAZA
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

EXAMINER

MCKANE, ELIZABETH L

ART UNIT PAPER NUMBER

1744

DATE MAILED: 08/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/923,223

Applicant(s)

DOWLING ET AL.

Examiner

Leigh McKane

Art Unit

1744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) 7-9, 20-22, 27-29 and 34-48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 11-19, 23-26 and 30-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>031102, 090902, 101502, 010903, 060906</u> | 6) <input type="checkbox"/> Other: _____ |

Election/Restrictions

1. Claims 7-9, 20-22, 27-29, and 34-48 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 9 June 2006.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

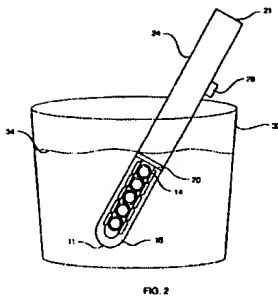
(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Art Unit: 1744

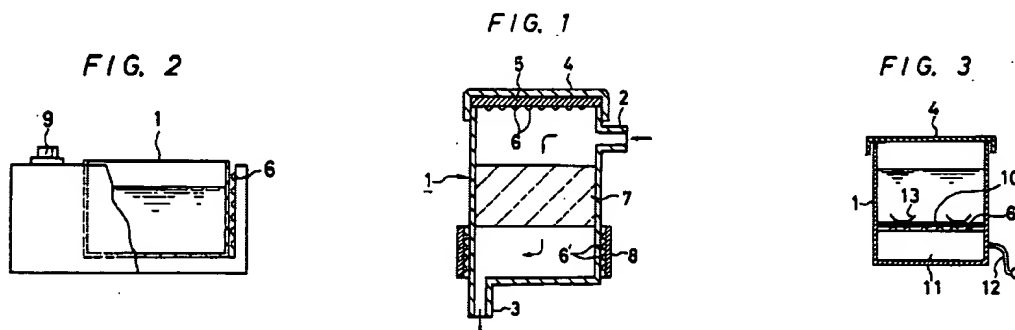
3. Claims 1-3, 14, 23, 26, and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Maiden (US 6,579,495).

Maiden teaches a handheld purification device including a purification chamber **32** and a UV LED **14** arranged to irradiate the inside of the chamber when it is positioned therein. See Figure 2. The purification chamber **32** contains a liquid **34**. A user interface (switch **28**) adjusts (turns on and off) the output of the LED.



4. Claims 1-6, 14, 18, 23, 25, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Koji (US 4,899,057).

Koji teaches a purification device includes a radiation transmissive purification **1** and UV LEDs **6** arranged to irradiate the inside of the chamber for purification of the liquid held therein. See col.3, lines 50-57; Figure 2. Alternatively, the LED can be placed within the chamber. See Figure 1. Furthermore, in Figure 3, Koji evidences a small-sized chamber for sterilization of contact lenses **13**. Given its size, the device is suitable to be handheld.



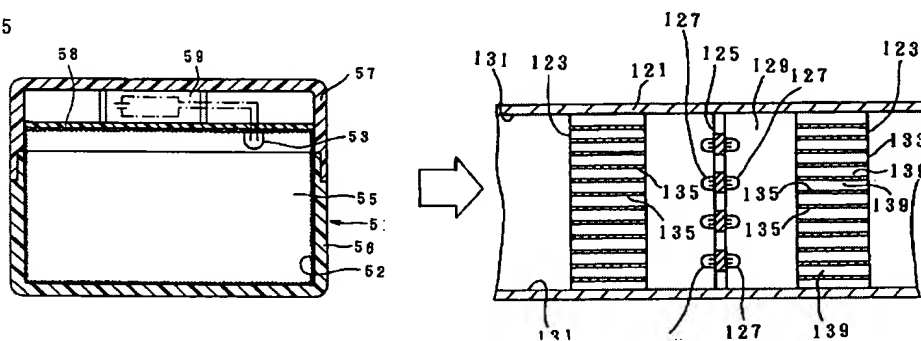
Art Unit: 1744

A user interface (power cord **12**) permits the user to adjust the output of the LED (turn it on and off). A filter **7** is arranged inside the chamber **1** in Figure 1 and is irradiated by LEDs **6**.

5. Claims 1-3, 18, 19, 23, and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamanaka et al. (US 5,919,422).

Yamanaka et al. discloses a purification device **51** having a purification chamber **55** and a UV LED **53** positioned inside the chamber and arranged to irradiate the inside thereof.

Fig. 5



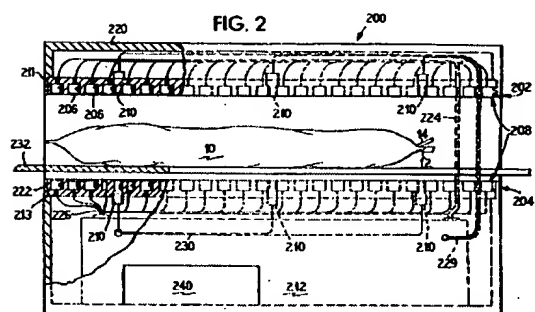
See Figure 5. The limitation “arranged to contain at least one of vapor and liquid” (claim 2) only requires the ability to do so. In fact, the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

In an alternate embodiment, an air purification chamber **121** contains LEDs **127** which irradiate the interior thereof. Moreover, the chamber **121** includes air filters **123** irradiated by the LEDs **127**. See Figure 12; col.22, lines 32-54.

Art Unit: 1744

6. Claims 1, 2, 4, 5, 10, 23, 24, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Wolf, Jr. et al. (US 5,527,704).

Wolf, Jr. et al. teaches a purification device **200** having a purification chamber **208** and LEDs **206**. The chamber **208** contains a bag **10** of liquid which is irradiated by the LEDs. The



chamber further includes a material **232** that is transmissive to irradiation. Further, the support surface **222** containing the LEDs **206** would be radiation transmissive. A processor **212** controls the LEDs, shutting them off when a suitable dose of irradiation has been received by the bag **10**, as detected by sensors **210**. See col.6, lines 33-47.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
10. Claims 10, 13, 15, 30, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maiden or Koji, both in view of Hanley et al. (US 6,565,802).

Neither Maiden nor Koji disclose a processor wherein the processor controls the output of the radiation source (LED) in response to the user interface. Hanley et al., however, teaches a apparatus for irradiating samples wherein the chamber 10 contains sensors for measuring lamp intensity. These measurements are processed by the system microprocessor. The operator, upon determination that the lamp output is too low, can cause the process to terminate. See col.10, lines 11-24; col.12, lines 38-57.

As diminishment of LED intensity would adversely affect the purification processes of both Maiden and Koji, it would have been obvious to one of ordinary skill in the art to provide the control means and operator input of Hanley et al., in order to provide a means by which to terminate the process when lamp intensity diminishes to the point of being ineffective.

Art Unit: 1744

11. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maiden or Koji, both in view of Hanley et al. as applied to claim 15 above, and further in view of Emery et al. (US 6,617,559).

While teaching the use of LEDs for purification, neither Maiden nor Koji disclose pulse width modulated control signals for controlling the LEDs. Nevertheless, Emery et al. teaches a light controller for LEDs wherein the “intensity of the light emitted by each light-emitting diode is controlled by pulse width modulation” such that “the diodes may be pulse-width modulated in the same way so as to produce light of the same intensity, or different pulse width modulation signal may be applied to different light-emitting diodes so that different diodes emit light of different intensity.” See col.3, lines 6-15. As the pulse-width modulated signals of Emery et al. permit separate control over the plural LEDs of both Maiden and Koji, it would have been an obvious means of control in these systems.

12. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maiden or Koji, both in view of Hanley et al. as applied to claim 15 above, and further in view of Evanchuk (US 4,441,096).

While teaching the use of LEDs for purification, neither Maiden nor Koji disclose voltage amplitude control of the LEDs. However, Evanchuk evidences that the use of a variable amplitude voltage to proportionally control LED intensity was known at the time of the invention. See col.4, lines 1-5. As increasing the voltage amplitude would have provided an increased LED intensity, thereby counteracting LED intensity diminishment, it would have been obvious to provide voltage amplitude control of the LEDs of both Maiden and Koji.

Art Unit: 1744

13. Claims 11 and 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koji in view of Hanley et al. as applied to claims 10 and 30 above, and further in view of Diamantopoulos et al..

Koji discloses that “light for preventing the proliferation of bacteria may be visible rays of light and infrared rays emitted from semiconductor lasers.” See col.7, lines 39-41. Koji does not disclose emitting these wavelengths from LEDs. Diamantopoulos et al., however, teaches that the use of visible- and infrared-emitting LEDs was known in the art at the time of the invention. See col.3, lines 48-50. As Koji already employs LEDs as UV radiation sources and as Diamantopoulos et al. teaches that LEDs are low power sources of radiation, they would have been an obvious choice for the visible and infrared radiation sources of Koji.

14. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koji in view of Hanley et al. and Diamantopoulos et al. as applied to claim 11 above, and further in view of Wolf, Jr. et al. (US 5,868,695).

The combination *supra* is silent with respect to a means by which to control the LEDs separately. Wolf, Jr. et al. teaches a device for irradiating a material using radiation emitted from a plurality of LEDs wherein because “each radiation source **30** is discrete, the control element **34** can be configured to operate two or more of the radiation sources at a different wavelength. Alternatively, the control element **34** can be configured to operate two or more of the discrete sources **30** of radiation at substantially the same wavelength.” See col.8, lines 12-18. As the control system of Wolf, Jr. et al. would have permitted separate control of the multiple radiation sources of Koji, it would have been obvious to add to the combination.

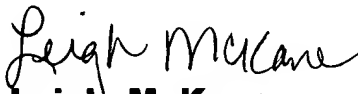
Art Unit: 1744

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leigh McKane whose telephone number is 571-272-1275. The examiner can normally be reached on Monday-Friday (5:30 am-2:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gladys Corcoran can be reached on 571-272-1214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Leigh McKane
Primary Examiner
Art Unit 1744

elm
30 July 2006